CENWP-OD 08 December 2015

MEMORANDUM FOR THE RECORD

TITLE - 15CGR03Unit Outage
DATE- 11 December 2015
PROJECT- Cougar Dam
RESPONSE DATE - 28 December 2015

Description of the problem
Cougar units were shutdown on 07 December due to a large increase in cavitation and existing penstock debris.

Type of outage required
Both units will be offline until they can be operated safely.

Impact on facility operation
No generation capabilities (both units) until come back online. All flow must go through the RO. The Portable Floating Fish Collector (PFFC) will need to go offline for about a day to perform a power reconfiguration.

Dates of impacts/repairs
07 December to 30 December 2015

Expected impacts on fish passage
Elevated TDG levels could negatively impact early emerging sac-fry below the project. Levels of TDG were near 117% at the time of this MFR.

Comments from agencies

-----Original Message-----
From: Richard Domingue - NOAA Federal
[mailto:richard.domingue@noaa.gov]
Sent: Tuesday, December 15, 2015 4:40 PM
To: Walker, Christopher NWP
Cc: Anne Mullan - NOAA Federal; Stephanie Burchfield - NOAA Federal
Subject: [EXTERNAL] Re: Flow Management and Water Quality Team (call, 12/17) (UNCLASSIFIED)

Chris, we agree that there is no compelling need for us to meet. We note that reservoir control is busy controlling flood risk, reservoir elevations are up, and there is no risk of the Corps being forced to drop below established minimum flows anytime soon.

However, I am quite curious about the cavitation problems at Cougar. Cavitation is caused by the pressure falling below the water's vapor pressure - generally caused by overly large differences in pressure within a turbine - and often associated with the operations near the outskirts of the turbine's performance hill chart. For example, I am familiar with cavitation when trying to operate a Francis turbine at very low flows. But that is not the case at Cougar. So, I am quite

curious - how does debris in the penstock induce cavitation? I'm not asking you to spend much time coming up with a response, but I would like to know what the Corps knows about this situation. We are interested in seeing the problem resolved as quickly as possible, as is the Corps. Thanks.

Final results

The USACE is looking into alternatives with the goal of operating turbine units before the upstream migration of adult spring Chinook salmon so that collection of fish at Cougar Adult Fish Collection Facility is effective. An additional MOC will be once additional information is available.

Please email or call with questions or concerns.
Thank you,

Chris Walker
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